

REMARKS

Claim Rejections 35 U.S.C. § 103 (a)

The Examiner has rejected claims 31-39 under 35 U.S.C. §103 (a) as being unpatentable over Efland et al. (US 6,025,275) and Byrne (US 5,136,364) in view of Yabu et al. (US 5,989,992).

Applicant respectfully disagrees with the Examiner. Applicant submits that the three references cited by the Examiner do not teach, suggest, or render obvious the method of Applicant's invention as claimed in claim 31.

Applicant has amended claim 31. Claim 31, as amended, teaches a method comprising: providing a substrate (300); forming a metal layer over said substrate, said metal layer comprising a bond pad (304) and a first member (306), said bond pad and said first member being separated by a gap (308); forming a first material (310) over said bond pad and over said first member, said first material having a low dielectric constant, said first material having at least a minimum thickness that is sufficient to completely fill said gap, said first material doped with fluorine atoms; forming a second material (312) over said first material, said second material being thin and resistant to moisture penetration, said second material being kept out of said gap; forming an opening (316) through said second material and said first material to expose a top surface of said bond pad, said opening having sidewalls (317) comprising edges of said second material and said first material; forming a barrier layer (318) over said second material, said sidewalls of said opening, and said top surface of said bond pad, said barrier layer being conductive, said barrier layer having a thickness sufficient to prevent moisture penetration; and forming a bump (320) over said opening. See Figures 3 a-h. Also, see pages 8-14 of the specification.

In contrast, the reference Yabu et al. cited by the Examiner does not teach forming a barrier layer over a second material (14). See Figure 6 (d). See Figure 6 (d). Also, see Figure 1.

Yabu et al. also does not teach forming a bump over an opening through a first material (13) and the second material (14). See Figure 6 (d). Also, see Figure 1.

Instead, Yabu et al. teaches forming a bond pad (15) over a metal wire (12) and, thus, also does not teach forming the first material (13) over the bond pad such that the first material (13) has at least a minimum thickness that is sufficient to completely fill a gap between the bond pad (15) and the wire (12). See Figure 1. Also, see Figures 6 (b)-(d) and Figure 7.

Yabu et al. also does not teach forming the second material (14) over the first material (13) such that the second material is kept out of the gap between the bond pad (15) and the wire (12). See Figures 6 (b)-(d) and Figure 7. Also, see Figure 1.

Applicant also wishes to bring the attention of the Examiner to an embodiment for which Yabu et al. specifically teaches forming an underlying moisture proofing film (17) in the gap between the metal wires (12) where the moisture proofing film (170 may be silicon nitride. Thus, Yabu et al. teaches against the invention claimed by the Applicant. See Col. 14, lines 46-50. Also, see Figure 12.

Again, Applicant wishes to bring the attention of the Examiner to yet another embodiment for which Yabu et al. specifically teaches forming an underlying moisture proofing film (17) in the gap between the metal wires (12) where the moisture proofing film (170 may be silicon nitride. Again, Yabu et al. teaches against the invention claimed by the Applicant. See Col. 16, lines 35-40. Also, see Figure 14.

Thus, combination of the methods of the three references Efland et al., Byrne, and Yabu et al. cited by the Examiner will not produce the method of Applicant's invention as claimed in claim 31. Applicant submits that the three references cited by the Examiner do not teach, suggest, or render obvious the method of Applicant's invention as claimed in claim 31.

Claims 32-39 are dependent on claim 31. Thus, combination of the methods of

the three references Efland et al., Byrne, and Yabu et al. cited by the Examiner will also not produce the method of Applicant's invention as claimed in claims 33-39. Applicant submits that the three references cited by the Examiner also do not teach, suggest, or render obvious the method of Applicant's invention as claimed in claims 32-39.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to independent claim 31 and dependent claims 32-39 under 35 U.S.C. §103 (a).

Applicant believes that all claims pending, including amended claim 31, are now in condition for allowance so such action is earnestly solicited at the earliest possible date.

If there are any additional charges, please charge Deposit Account No. 02-2666. If a telephone interview would in any way expedite the prosecution of this application, the Examiner is invited to contact the undersigned at (408) 720-8300.

Respectfully submitted,

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